TIMOFEYEV, A.N.

Interpretation of geophysical anomalies by graphic methods (by tangentials). Trudy Gor.-geol. inst. no.30:189-208 '57.
(MIRA 11:7)

(Geological surveys)

SOV/49-59-2-18/25

AUTHORS: Timofeyev, A. N., Bellavin, O. V.

TITLE: On the Gravimetric and Magnetometric Intersection of the Tagil -Magnitogorsk Sinclination in the Urals (O gravimetricheskom i magnitometricheskom peresechenii Tagil'sko-Magnitogorskogo sinklinoriya Urala)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geofizicheskaya, 1959, Nr 2, pp 311-315 (USSR)

ABSTRACT: Due to the linear distribution of the main geo-tectonic structure of the Urals, the geophysical investigations are greatly facilitated, which was shown by the positive results of the regional gravimetric and magnetometric work carried out in 1956 by the Urals Geological Institute Branch of the Academy of Sciences USSR in the rayon of N. Tagil. The determination of the gravity forces at a depth of 1 km was performed by the gravimeter GH-3 and the vertical components of the magnetic field with the magnetometer M-2. The anomalies of gravity were calculated with the Bouguer correction and the actual density of rocks were determined (Table on p 313 shows the number of observations and the density of 9

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On the Gravimetric and Magnetometric Intersection of the Tagil - Magnitogorsk Sinclination in the Urals

kinds of rock). The results are illustrated in Fig.1, where the anomalies of gravity and the geological anomalies cross-section of the N. Tagil rayon are shown in the top graph, while the geophysical cross-section is given in the lower diagram (1 - gabbro-amphibolite, 2 - compound formation of carbon-siliceous, mica-quartz, and silica-shale, 3 - gabbro, 4 - effusive rocks, 5 - quartz and metamorphic layer, 6 - pyroxenite, 7 - calculated anomaly of gravity, 8 - gneiss-hornblendite, 9 - diorite, 10 - anomaly of a gravity Δg with Bouguer reduction, as measured with a gravimeter, 11 - Δg Bouguer anomaly, pendulum determined, 12 - granite-gneiss, 13 - serpentinite, 14 - horizontal gradient of the gravity, Vzx , 15 - bearings, 16 - carbon-graphitous, silica-quartzous and green shale, 17 - syenite, 18 - anomaly of the vertical component ΔZ of the magnetic field). The results of the calculation of the gravity force of the upper half-space are shown in Fig 2, from which it can be seen that the local anomalies disappear at 10 km high. A similar calculation shows that the anomalies of the vertical component of the magnetic field, based on the observations of previous years, do not reach 3 to 4 km high. Also, they

On the Gravimetric and Magnetometric Intersection of the Tagil - Magnitogorsk Sinclination in the Urals

cannot be relied upon when the deep rooted rocks are investigated, due to the reflection of a part of the magnetic field. The analysis of the data obtained from the experiments shows that the Tagil-Magnitogorsk sinclination is characterized by the positive anomalies which reflect the geological structure sufficiently accurately. The most precise results were obtained for the gabbro-peridotite formations protruding on to the surface. In general, the local investigations of gravitational anomalies of the Urals could contribute to the full determination of their structure. There are 2 figures, 1 table and 2 Soviet references.

ASSOCIATION: Akademiya nauk SSSR, Gorno-geologicheskiy institut (Mining-Geological Institute, Academy of Sciences USSR)

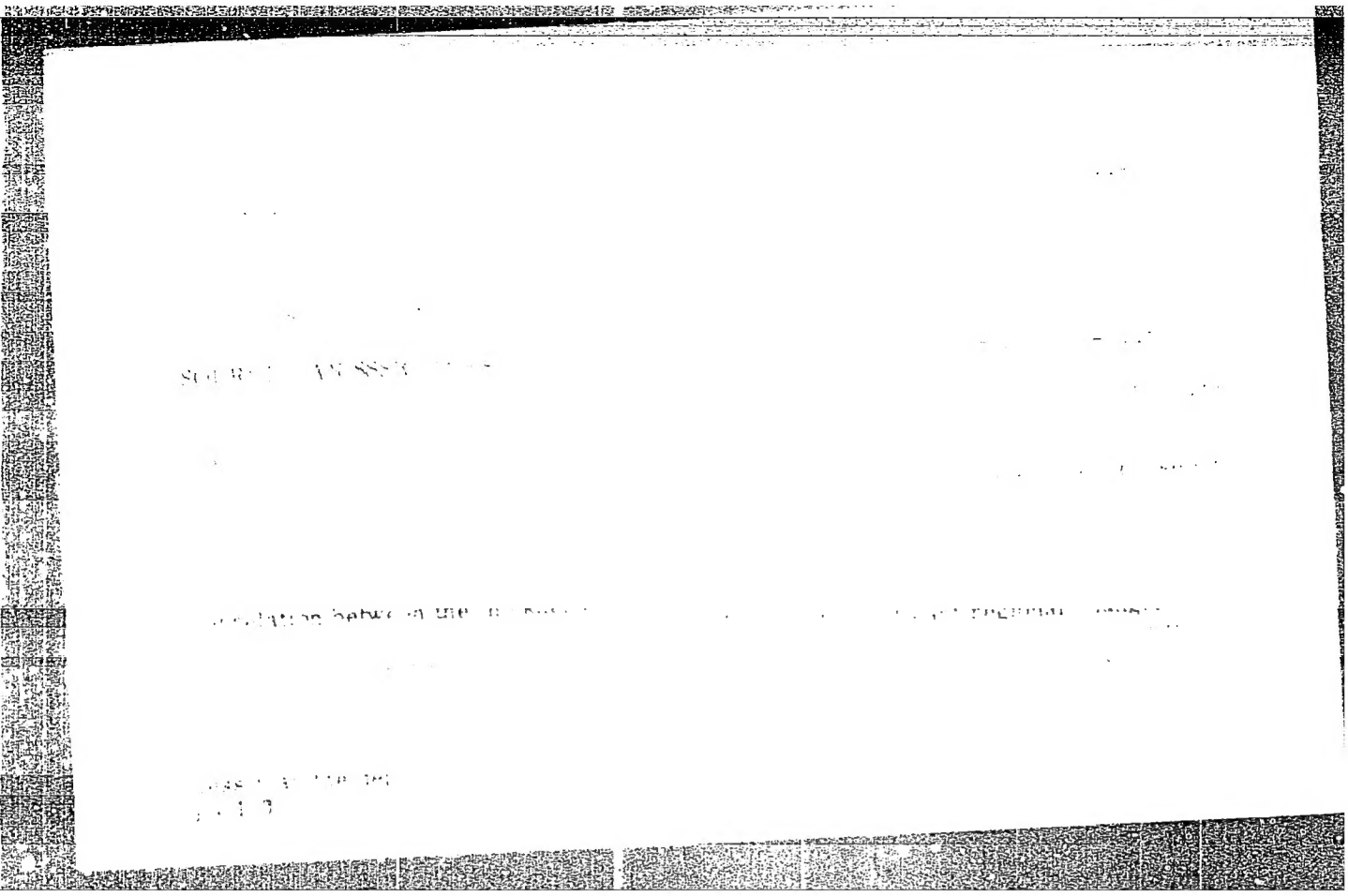
SUBMITTED: December 12, 1957.

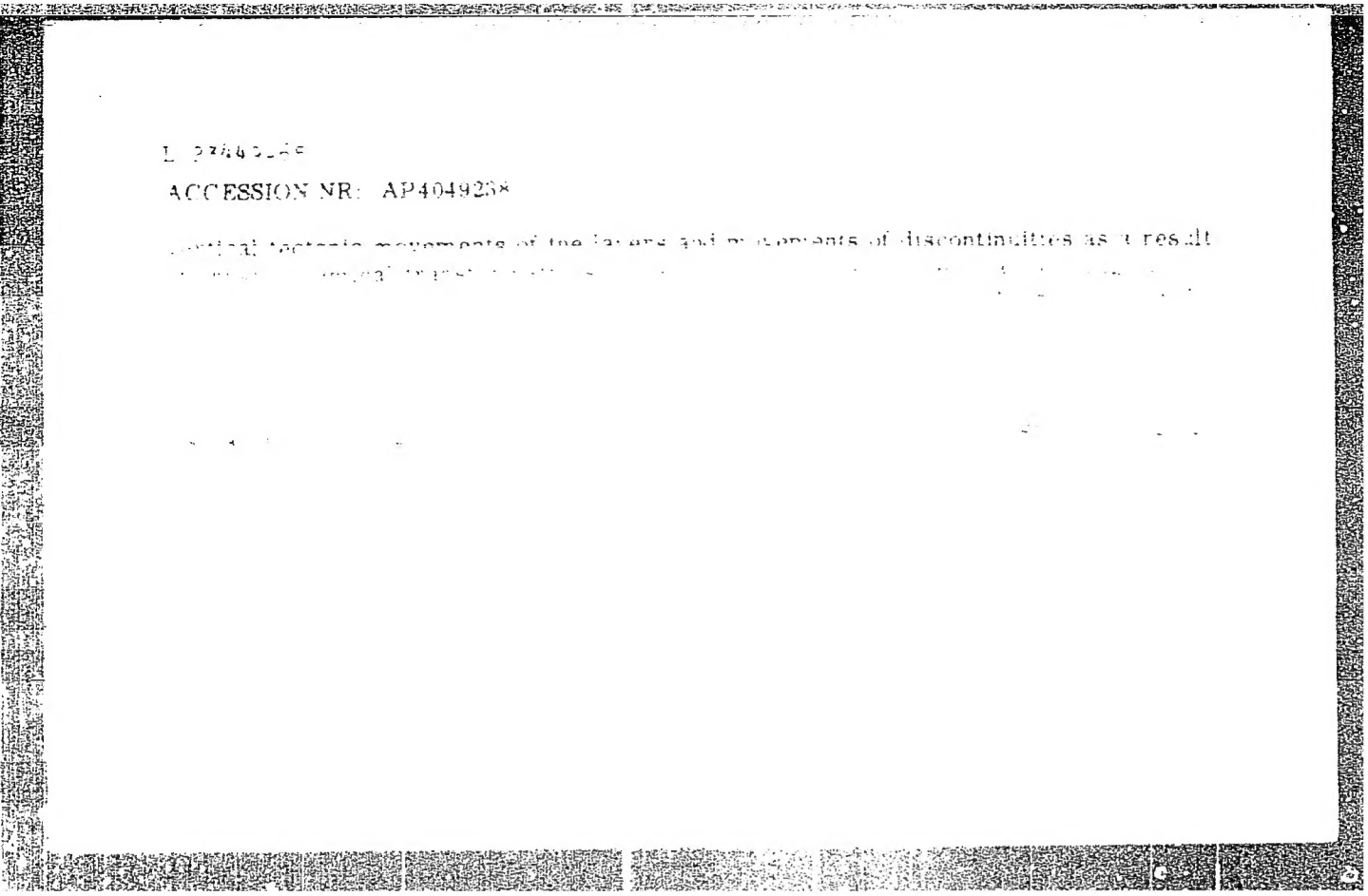
TIMOFEYEV, A.N.

Interpretation of magnetic anomalies in the case of variability in magnetic susceptibility of rocks. Trudy Inst.geol. i geofiz. Sib.otd. AN SSSR no.1:137-145 '60. (MIRA 15:2)
(Ural Mountains--Magnetic prospecting)

TIMOFEYEV, A.N.; TIMOFEYEVA, V.V.

Physical properties of dunite. Trudy Gor.-geol. inst. UFAN SSSR no. 35:271-275 '60. (MIRA 14:1)
(Dunite)





L 22463-65

ACCESSION NR: AP4049258

Vertical tectonic movements of the layers and movements of discontinuities as a result

[redacted]

[redacted] A. N.

[redacted] The structure of the Earth's crust from [redacted]

[redacted]

[redacted] earth crust, gravity, gravitational anomaly, Mohorovicic discontinuity.

[redacted]

Card 1/2

ACCESSION NR: AP5001045

from physical prophylactic studies, and concluded that [illegible] implementation of the

SUBMITTED: 14Aug63 ENCL: 00 SUB CODE: ES

NO REF SOV: 011 OTHER: 004

Card 2/2

L 1935-66 EWT(1) GW

ACCESSION NR: AT5022651 UR/2874/65/000/003/0003/0015

AUTHOR: Bulashevich, Yu. P.; Khalevin, N. I.; Timofeyev, A. N.; Kuznetsov, A. A.

TITLE: Selection of a site in the Urals for sinking a superdeep borehole

SOURCE: AN SSSR. Ural'skiy filial. Institut geofiziki. Trudy, no. 3, 1965. Geofizicheskiy sbornik, no. 4: Metodicheskiye voprosy rudnoy geofiziki Urala (Geophysical papers, no. 4: Methodological problems of mining geophysics of the Urals), 3-15

TOPIC TAGS: superdeep drilling, Moho discontinuity, Conrad discontinuity, gravity survey, seismic survey, seismic profile, aeromagnetic survey, magnetic survey, earth crust

ABSTRACT: Since 1961, several Soviet scientific organizations have carried out investigations in the Ural Mountains to determine the optimum location for drilling a superdeep borehole. The area covered extended along the range from 51°20' to 58°40' N. Lat. The announced purposes of these studies, both of scientific and industrial import, were as follows: 1) thickness, composition, and stratigraphic sequence of geological formations; 2) nature of the geosynclinal sediment—"granitic" transition zone; 3) thickness and composition of the "granitic" layer; 4) nature of the "gran-

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L 1935-66

ACCESSION NR: AT5022651

3

itic" layer—"basaltic" layer transition zone; 5) physicochemical changes in the rockes with depth; 6) types of igneous intrusions and ore bodies; 7) physical properties of the rocks and the nature of discontinuities (Conrad and Moho), and 8) changes in temperatures with depth and the thermodynamic conditions at great depths. Results of preliminary studies indicate that the most favorable site for the borehole will probably be in the Tagil-Magnitogorsk synclinorium in the Verkhotur'ye-Krasnoural'sk region where a number of industrial boreholes have already been drilled to a depth of 1.2 km. Final selection of the site, however, will require additional gravity and magnetic (terrestrial and aerial) surveys as well as deep seismic sounding and reflected-wave profiles. Orig. art. has: 6 figures. [ER]

ASSOCIATION: Akademiya nauk SSSR. Ural'skiy filial. Institut geofiziki (Ural Branch, Academy of Sciences, SSSR. Institute of Geophysics)

SUBMITTED: 00 ENCL: 00 SUB CODE: ES

44,55

NO REF SOV: 012 OTHER: 000 ATD PRESS: 4115

Card 2/2

L 38729-66 EWT(1) GW

ACC NR: AT6011167 SOURCE CODE: UR/3197/65/000/002/0401/0406

AUTHOR: Timofeyev, A. N.

ORG: Institute of Geophysics, AN SSSR (Institut geofiziki AN SSSR)

TITLE: Relationship between the most recent and contemporary movements of the earth's crust and gravity anomalies in the Urals

SOURCE: AN EstSSR. Institut fiziki i astronomii. Sovremennyye dvizheniya zemnoy kory. Recent crustal movements, no. 2, 1965, 401-406

TOPIC TAGS: crustal deformation, epeirogeny, structural geology, gravity anomaly

ABSTRACT: The author has tried to establish whether or not the most recent and contemporary movements of the earth's crust in the Urals are caused by isostatically unadjusted structures. He concludes that the most recent vertical movements of the main structural-tectonic blocks of the Urals relate to the isostatic gravity anomalies, with blocks displaced in the direction of the load adjustment. The relative subsidence of grabens contributes to reduction of positive anomalies in the synclinoria with which the grabens are associated. The non-

Card 1/2 UDC: 550.342

L 38729-66

ACC NR: AT6011167

correspondence of movements and anomalies in the Cis-Urals downwarp is attributed to another cause for these movements. The author stresses the necessity of expanding considerably the geodetic and geophysical investigation of recent and contemporary movements of the earth's crust in the Urals. Orig. art. has: 1 figure. [JJ]

SUB CODE: 08/ SUBM DATE: none/ ORIG REF: 009

Card 2/2

L 16176-66 EWT(m)/T/EWP(t) IJP(c) JD

ACC NR: AP5025323 SOURCE CODE: UR/0126/65/020/003/0390/0395

AUTHOR: Klotsman, S. M.; Arkhipova, N. K.; Timofeyev, A. N.; Trakhtenberg, I. Sh.

34

ORG: Institute of Physics of Metals, AN SSSR (Institut fiziki metallov AN SSSR) B

TITLE: Diffusion of silver in polycrystalline gold

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 3, 1965, 390-395

TOPIC TAGS: silver, gold, volumetric analysis, crystal structure, polycrystal, metal diffusion

ABSTRACT: The present work is a continuation of an earlier investigation by the authors (FTT, 1964, 5, 11, 3978 and FMM, 1963, 16, 4, 611) who needed to know the diffusion of silver in polycrystalline gold in order to continue their research on the effect of an electric field on the intercrystalline diffusion of silver. The volumetric diffusion D_V of silver in gold at 770 - 1040C was determined first by using two methods: (1) the relation of integral intensity I of the γ component of the radiation of silver 110 on the depth of diffusion penetration x, and (2)

Card 1/2 UDC: 539.292 :548.0

ACC NR: AP5025323

by the direct use of measured values of integral activity. The effect of temperature on the value of D_v was represented by the straight line in the coordinates $\log D_v = f(1/T)$. The formula was derived for the calculation of volumetric diffusion of silver into polymetallic gold:

$$D_{об} = 0{,}083 \exp\left(-\frac{40\,400 \pm 500}{RT}\right) см^2/сек.$$

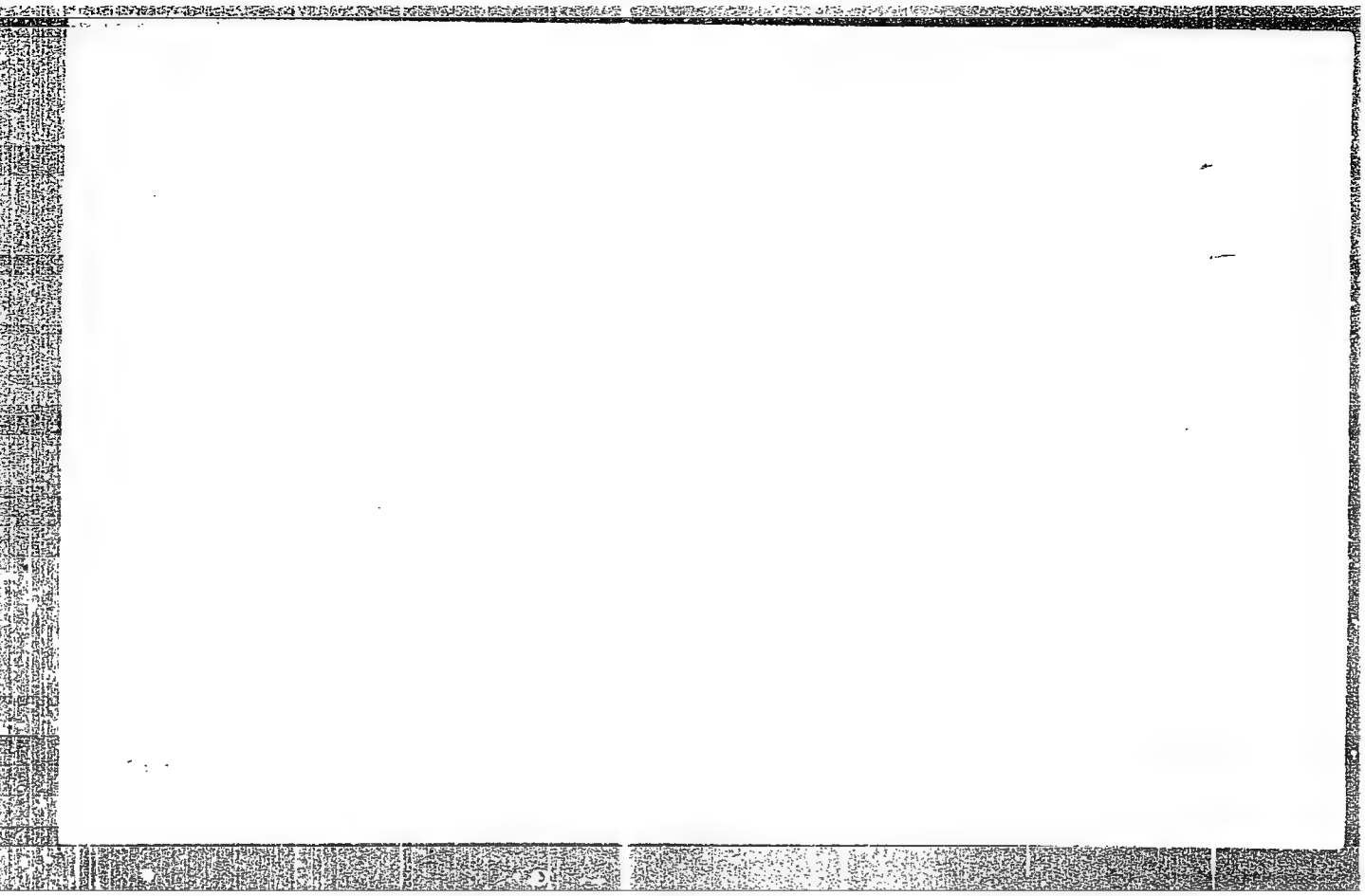
This agreed well with the results obtained by Mallard et al. (Phys. Rev., 1963, 129, 2, 617). Diffusion annealing at a temperature range of 540- 275C was made for determining the coefficient of intergranular diffusion D_g. Calculation of D_g was made by the Fisher method (J. Appl. Phys., 1951, 22, 74). The final equation is

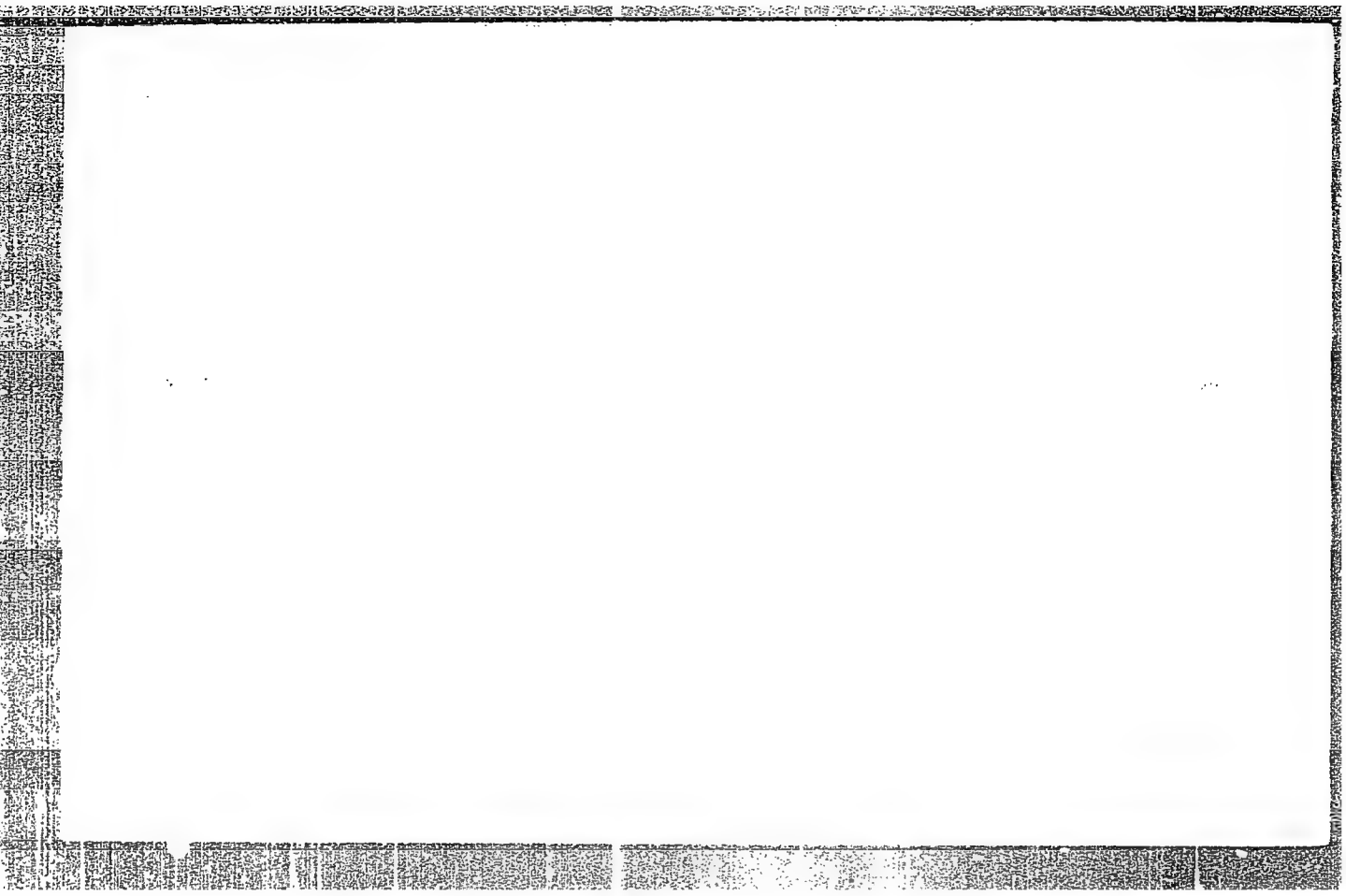
$$\delta D_{гр} = 9{,}5 \cdot 10^{-10} \exp\left(-\frac{16\,200 \pm 800}{RT}\right) см^3/сек.$$

where δ is the semiwidth of the grain boundary. Orig. art. has: 7 formulas, 6 figures and 1 table.

SUB CODE: 11,20/ SUBM DATE: 01Feb65/ ORIG REF: 004/ OTH REF: 003

Card 2/2





APPROVED FOR RELEASE: 07/16/2001 CIA-RDP86-00513R001755710018-6"

TIMOFEYEV, A.N.

Crustal structure from gravity and seismic measurements. Part 2. Izv. AN SSSR. Ser. geofiz. no.11:1585-1594 N '64. (MIRA 17.12)

1. Institut geofiziki Ural'skogo filiala AN SSSR.

TIMOFEYEV, A.N.

Studying heterosis in tomatoes in the Maritime Territory. Sbor. trud. asp. i mol. nauch. sotr. VIR no.5:133-136 '64.

(MIRA 18:3)

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Investigating the diffusion processes of monochalcogenides of transition metals. Part 5: Mechanism of the diffusion of nickel and sulfur in nickel monosulfide. Fiz. met. i metalloved. 17 no.1:132-139 Ja '64.
(MIRA 17:2)

1. Institut fiziki metallov AN SSSR.

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Intercrystallite electric transfer of silver in copper. Fiz. met. i metalloved. 16 no.4:611-612 O '63. (MIRA 16:12)

1. Institut fiziki metallov AN SSSR.

PETROV, Georgiy L'vovich; BRUK, B.I., kand. tekhn. nauk, retsenzent; TIMOFEYEV, A.N., inzh., retsenzent; DEMYANTSEVICH, V.P., kand. tekhn. nauk, nauchnyy red.; OSVENSKAYA, A.A., red.; KRYAKOVA, D.M., tekhn. red.

[Inhomogeneity of the metal in welded joints]Neodnorodnost' metalla svarnykh soedinenii. Leningrad, Sudpromgiz, 1963. 205 p. (MIRA 16:3)

(Welding--Testing) (Metallography)

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Investigating the diffusive properties of transition metal chalcogenides. Part 3: Self-diffusion of nickel in nickel oxide. Fiz. met. i metalloved. 14 no.3:428-433 S '62. (MIRA 15:9)

1. Institut fiziki metallov AN SSSR.
(Diffusion) (Nickel)

ARKHAROV, V.I.; KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Investigating the diffusion properties of transition metal monochalchogenides. Fiz. met. i metalloved. 14 no.1:68-74 Jl '62. (MIRA 15:7)

1. Institut fiziki metallov AN SSSR.
(Metal crystals) (Diffusion)

S/126/62/014/006/015/020
E073/E420

AUTHORS: Klotsman, S.M., Timofeyev, A.N., Trakhtenberg, I.Sh.

TITLE: On the mechanism of diffusion of impurities in germanium

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.6, 1962, 925-927

TEXT: In earlier work it was found that "rapidly diffusing" impurities have a low degree of solubility in germanium (10^{14} to 10^{15} cm^{-3} at 800°C), whilst the solubility of "slowly diffusing" impurities is larger by three to five orders of magnitude. According to Kosenko "slowly diffusing" impurities (zinc indium) have a "fast" component and conversely for Ag and Fe. For "fast diffusing" impurities the solubility in the range of "slow" diffusion is of the order of 10^{18} cm^{-3}, i.e. in the range of solubility of "slowly diffusing" impurities. The ratio of the coefficients of "fast" and "slow" diffusion in germanium of Ag, Fe, In, Zn and Te at 800°C is 10^4 to 10^5 and the solubility ratios are respectively 10^2 to 10^4. The above-mentioned relations governing the diffusion of impurities in germanium are explained by

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On the mechanism ... S/126/62/014/006/015/020
E073/E420

the fact that the impurities diffuse simultaneously in accordance with two mechanisms: along the vacant lattice points and interstitially, the latter causing "fast" diffusion. All available experimental data confirm the accepted view that "slow" diffusion is through the vacancy mechanism. According to published data, most of the investigated impurities, with the possible exception of lithium, move in the regular germanium lattice along thermally excited vacancies. In the presence of structural nonuniformities of the type of single dislocations or dislocation walls, there will be a flow along these nonuniformities. The "fast diffusing" impurities differ from those of groups III and V by the fact that they are particularly prone to diffusion along structural nonuniformities. These impurities which have a low solubility in germanium (Ag, Cu, Ni, Fe, Co) are apparently adsorption-active and enrich the structural nonuniformities. The behaviour of Cu and Ge shows that this conclusion is valid. The problem of interaction between the structural nonuniformities in Ge will be the subject of a separate paper.

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S/126/62/014/006/015/020
E073/E420

On the mechanism ...

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: May 28, 1962

Card 3/3

S/126/62/014/003/012/022
E021/E435

AUTHORS: Klotsman, S.M., Timofeyev, A.N., Trakhtenberg, I.Sh.

TITLE: Investigation of the diffusion properties of chalcogenides of transition metals.
III. Self-diffusion of nickel in nickel oxide

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.3, 1962, 428-433

TEXT: The coefficient was determined of self-diffusion of nickel in the scale growing during oxidation of electrolytic nickel (99.99%) samples (15 x 15 x 3 mm). The source of diffusion was a 10 mm diameter, 0.1 μ thick spot of nickel, labelled by Ni^{63}, vacuum-sprayed on the polished surface of the sample. The samples were heated in air in a furnace controlled to ± 3°C. After diffusion, parallel 10 ± 2 μ thick layers were removed mechanically from the surface and then the total activity of the samples was measured. For calculating the coefficient of diffusion the relation $\log I = f(x^2)$ was constructed (I - integral activity and x - depth). It was found that the temperature relationship of the coefficient of self-diffusion of nickel in

Card 1/2

Investigation of the diffusion ...

nickel oxide in the range 1190 to 1400°C is

$$D = 4.8 \times 10^{-4} \exp\left[-(48.4 \pm 2.0) \times 10^3/RT\right] \text{ cm}^2/\text{sec}.$$

It is proposed that the divergence in absolute values of the coefficient of self-diffusion from the data in the literature is connected with differences in purity of the samples. The results showed absence of any marked contribution by intercrystalline diffusion of nickel in nickel oxide to the total diffusion. In the investigated temperature interval, diffusion of the metal through the scale plays a preferential role in the oxidation of nickel. There are 2 figures and 1 table.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals, AS USSR)

SUBMITTED: January 12, 1962

Card 2/2

TIMOFEYEV, A.N.; ROZENBERG, V.N.

GAK-3M gravimeter with an electric thermostat. Geofiz. razved. no.6:93-95 '61. (MIRA 15:4)

(Thermostat)
(Gravimeter (Geophysical instrument)--Electric equipment)

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Effect of minor impurities on the coefficients of diffusion in polycrystalline materials. Part 4: Effect of cadmium on the intercrystalline self-diffusion of silver. Fiz. met. i metalloved. 20 no.1:78-83 Jl '65.

(MIRA 18:11)

1. Institut fiziki metallov AN SSSR.

AKKHAROV, V.I.; KLOTSMAN, S.M.; TIMOFEYEV, A.N.; RUSAKOV, I.I.

Study of intercrystalline diffusion in metals and alloys. Issl. po zharopr. splav. 3:113-118 '58. (MIRA 11:11)
(Diffusion) (Crystal lattices)

ARKHAROV, V.I.; GALISHEV, V.S.; KLOTSMAN, S.M.; TIMOFEYEV, A.N.

Feasibility of autoradiographic detection of nonuniform concentrations of adsorption origin. Issl. po zharopr. splav. 3:296-302 '58.
(MIRA 11:11)

(Alloys--Metallography) (Adsorption)

SOV/126-6-2-8/34

AUTHORS: Arkharov, V. I., Klotsman, S. M. and Timofeyev, A. N.

TITLE: The Effects of Traces of Impurities on the Diffusion Coefficients for Polycrystalline Materials (O vliyanii malykh primesey na koeffitsienty diffuzii v polikristallicheskikh materialakh). II

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 2, pp 255-260 (USSR)

ABSTRACT: Al-110 is used to study the diffusion of silver in pure copper, and in copper containing 0.1% Be without and with previous heat treatment (100 hours at 863°C, or the same plus 50 hours at 590°C). Figs. 1-4 represent the results for these cases, in the above order (radiation intensity in layer-by-layer electrolytic etching vs.depth), in all cases for 100 hours' diffusion at 590°C. The effect of the Be is to increase intercrystallite diffusion, and the magnitude depends on the treatment. The extent to which the Be tends to concentrate in the zones between crystallites is discussed in a rather

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general way in the light of the results.
There are 5 figures, 1 table and 13 references, 10 of which are Soviet, 3 English.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala AN SSSR (Institute of Metal Physics, Ural Branch of the Ac.Sc., USSR)

SUBMITTED: August 21, 1957

Card 2/2 1. Copper alloys--Diffusion 2. Silver--Properties
3. Beryllium--Properties

AUTHORS: Arkharov, V.I., Klotsman, S.M., Timofeyev, A.N.

TITLE: The Employment of Radioactive Tracers When Solving Problems of Internal Adsorption in Solids (Primeneniye radioaktivnykh indikatorov k resheniyu problemy vnutrenney adsorbtsii v tverdykh telakh)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 4, pp. 380-381 (USSR)

ABSTRACT: One of the most important factors influencing the physical properties of technical materials is the influence exercised by the internal adsorption of impurities upon various structural inhomogeneities.
For a system Cu + Ag with slight Sb-impurities it was found by metallographic as well as by autoradiographic means that with a diffusion of Ag a non-uniform front with projections is formed, which extends far into the intercrystalline boundary. Furthermore, the fact was established by means of Ag^{110} that there is a linear dependence between ln i (characteristic of volume diffusion) and y (depth of penetration of the diffusion). It follows therefrom that the Sb-admixtures bring about an essential

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The Employment of Radioactive Tracers When Solving Problems of Internal Adsorption in Solids

change of the diffusion permeability of the intercrystalline zone, which is indicative of the effect produced by the internal diffusion of the admixture. There are 16 references, 14 of which are Soviet.

SUBMITTED: January 9, 1958

1. Copper-silver systems--Adsorptive properties 2. Copper -silver systems--Autoradiography 3. Antimony--Adsorption 4. Silver isotopes (Radioactive)--Applications

Card 2/2

ARKHAROV, V.I.; KLOTSMAN, S.M.; TIMOFEYEV, A.N.

Effect of small additions on diffusivity in polycrystalline materials. Issl.po zharopr.splav. 4:170-175 '59.
(MIRA 13:5)
(Diffusion) (Metals at high temperature)

24(6) SOV/126-7-2-24/39

AUTHORS: Klotsman, S. M., Timofeyev, A. N. and Trakhtenberg, I.Sh.

TITLE: On the Problem of Determination of Diffusion Coefficients Using an "Integral Residue" Method (K voprosu ob opredelenii koeffitsiyentov diffuzii metodom "integral'nogo ostatka")

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 2, pp 295-298 (USSR)

ABSTRACT: Gruzin (Ref 1) proposed an "integral residue" method for measurement of diffusion coefficients in solids. The method is based on a calculation of an integral (total) activity of each of the layers of equal thickness which are cut off from a sample. This activity is deduced from the activities of the sample before and after cutting off the layer in question (the activity referred to may be, for example, radioactivity of a tracer). Gruzin assumed that activity is uniformly distributed in the cut-off layer. The present note proposes a method for establishing whether this assumption is justified and describes an approximate procedure for the case when the non-uniform distribution of activity in the cut-off layer has to be allowed for. The paper is entirely

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On the Problem of Determination of Diffusion Coefficients Using an "Integral Residue" Method

theoretical.
There is one Soviet reference .

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Metal Physics, Ac. Sc., USSR)

SUBMITTED: April 22, 1958

Card 2/2

67759

12.1280 SOV/126-8-5-11/29

AUTHORS: Arkharov, V.I., Klotsman, S.M., and Timofeyev, A.N.

TITLE: On the Effect of Small Additions on the Diffusion Coefficients in Polycrystalline Materials. III - Effect of Thallium on the Self-Diffusion of Silver

PERIODICAL: Fizika metallov i metallovedeniye, Vol 8, 1959, Nr 5, pp 709-713 (USSR)

ABSTRACT: Silver (99.99%), remelted in vacuum, and chemically pure thallium were used as the raw materials in the investigation. Ag-Tl alloys were made in an argon atmosphere. Ingots of pure silver and of the alloy were cold forged into rods of 12 x 12 mm cross-section. All heat-treatment operations and diffusion annealing were carried out in a vacuum of the order of 10^{-1} to 10^{-2} mm Hg. The temperature was maintained with an accuracy of ± 1 °C. After forging, all specimens were recrystallized for 6 hours at 900 °C. The grain size of all specimens was practically the same, being approximately 1 mm. After recrystallization, the specimens of pure silver and of the alloy were subjected to one of the following variants of heat treatment: 1) annealing at 350 °C for 200 hours; 2) annealing at 285 °C for

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On the Effect of Small Additions on the Diffusion Coefficients in Polycrystalline Materials. III - Effect of Thallium on the Self-Diffusion of Silver

200 hours; 3) annealing at 170 °C for 200 hours; and 4) annealing at 170 °C for 200 hours, followed by annealing at 350 °C for 100 hours. Radioactive silver was applied to the surface of the specimens by evaporation in vacuum. All specimens, having undergone one of the above variants of heat treatment, were subjected simultaneously to diffusion annealing. The latter was carried out at 285 °C for 200 hours. The distribution of silver in the diffusion zone was determined by a layer analysis using the integral residue method. Measurements of the activity and thickness of the removed layers were carried out employing a method described by Arkharov et al (Refs 1, 2). Figs 1 and 2 are typical graphs for the dependence of the residual integral activity logarithm on the depth of diffusion in pure silver and in the alloy. In a table on page 711, values of diffusion permeability of intercrystalline members of polycrystals of pure silver and a silver alloy containing 0.1% Tl are shown. As can be seen from the

On the Effect of Small Additions on the Diffusion Coefficients in Polycrystalline Materials. III - Effect of Thallium on the Self-Diffusion of Silver

results obtained, the temperatures of maximum adsorption enrichment of the intercrystalline members does not coincide with the temperature of maximum volume solubility. From the independence of the diffusion permeability of the intercrystalline transition zones in pure silver on preliminary heat treatment, it is concluded that the structure of these zones remains unaltered in the investigated temperature range. From data on the dependence of the diffusion permeability of intercrystalline members in the silver - 0.1% Tl alloy on preliminary heat treatment, the adsorption activity of Tl in Ag can be calculated. An experimental confirmation of Arkharov's hypothesis (Ref 8) on the existence of a temperature dependence of the degree of adsorption enrichment was obtained. The sign of the temperature dependence of the intercrystalline internal adsorption of Tl in Ag was derived. It is suggested that the excess energy in the intercrystalline transition zones decreases during adsorption of Tl, mainly due to

On the Effect of Small Additions on the Diffusion Coefficients in Polycrystalline Materials. III - Effect of Thallium on the Self-Diffusion of Silver

its geometrical structure and not due to interatomic reactions.
There are 2 figures, 1 table and 8 references, of which 6 are Soviet and 2 English.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals, Academy of Sciences USSR)

SUBMITTED: May 20, 1959

S/520/59/000/022/012/021
E111/E452

AUTHORS: Klotsman, S.M. and Timofeyev, A.N.

TITLE: Methodological Possibilities for Studying Internal Adsorption and Some Diffusion Problems With the Aid of Tracer Atoms

PERIODICAL: Akademiya nauk SSSR. Ural'skiy filial, Sverdlovsk. Institut fiziki metallov. Trudy, No.22, 1959, pp.77-91

TEXT: A critical evaluation is attempted of tracer-atom methods used at the laboratoriya diffuzii (Diffusion laboratory), Institut fiziki metallov AN SSSR (Institute of Physics of Metals AS USSR). The difficulties (e.g. special equipment, safety precautions) of such methods necessitate the evaluation. In the first part the possibility of using the method for studying inter adsorption is assessed. A considerable amount of information has already been built up (Ref.1 to 11) and several investigations, in which alloy-component segregation has been studied with tracers, are available (Ref.12 to 15). Radiometric methods have not yet been used although a simple and promising procedure has been described (Ref.16). From a whole series of results, it can be concluded that the excess energy of structural heterogeneities in alloys

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is reduced through the creation of non-uniform concentrations of some impurities. The authors go on to assess the applicability of various methods to the solution of internal adsorption problems. The first group is the "slit counter" method in which radiation from given parts of the specimen delineated by a diaphragm between specimen and counter is registered and compared. The authors discuss slit characteristics and grain size as factors in the applicability of the method and show that the use of mixed radiation detracts from its usefulness. The second method is that of sample analysis, an example of which is the work of J.K.Dean and W.P.Davy (Ref.17), described by the present authors. The deficiencies of this method are largely eliminated if spectroscopic analysis is replaced by radiometric analysis using tracers. One variant is radiometric determination of the quantity of tracer component, removal of chips from different parts of the section and colorimetric or spectroscopic determination of sample weight (of the order of 10^{-5} g). With this variant the error should not exceed 10%. The third method is the autoradiographic one, which has not yet been successfully applied to the study of fine concentration differences; with very thin section (e.g. Ref.18) and

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photographic emulsions, better results can be obtained. The present authors participated (Ref.19) in a theoretical calculation of conditions for applying the method to internal adsorption studies. This showed that considerably improved resolving power and sensitivity are required. The second part of this paper deals with the possibilities of studying the diffusional permeability of oxide phases, for which the tracer method has proved useful (Ref.22 to 30). Special difficulties arise when a multi-layer scale has been formed. For this, compacts of synthetic phases as formed in reaction diffusion can be used: with measurement of diffusion by variants of the radiometric method of layer analysis or of the adsorption method (Ref.22 to 30). Results sometimes differ (Ref.27,30). Adsorption methods are more convenient but can be used only when their results can be checked by methods giving the true concentration distribution in the specimen. When compacts are used, the effect of their pores on diffusion (Ref.32,33) must be borne in mind. The work of R.Lindner (Ref.24 to 26) is interesting in this connection and the authors discuss it and that of R.E.Carter and F.D.Richardson (Ref.27) at some length. Finally the authors briefly discuss

S/520/59/000/022/012/021
E111/E452

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non-Soviet work with the use of O^{18} and S^{35}. Acknowledgments are expressed to Professor V.I.Arkharov for his interest in the work. There are 35 references: 16 Soviet and 19 non-Soviet.

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3145
S/626/60/000/012/009/010
D298/D303

21 4500

AUTHORS: Gorbatyuk, N. V., and Timofeyev, A. N.

TITLE: The distribution of dispersed elements among the components of reservoirs. III. Stabilization of the radioactivity of a fresh solution of uranium fragments with its even entry into the reservoir, and the irradiation doses inside and outside the reservoir

PERIODICAL: Akademiya nauk SSSR. Ural'skiy filial. Institut biofiziki. Trudy. no. 12. Moscow, 1960. Sbornik rabot Laboratorii biofiziki. no. 2: Problemy biofiziki, 224-237

TEXT: The work presents a mathematical method for the approximate determination of the limit of accumulation of radioactivity in a reservoir with constant entry of the radioactive agent into the reservoir. The radiation doses arising within and without the reservoir are also determined. Within a certain time a dynamic balance will be achieved, i.e. the amount of radioactivity entering the reservoir will be balanced by the amount which has decayed in this

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The distribution of dispersed ...

period. The authors compute the level and time of stabilization for unseparated solutions of uranium fragments aged 30 and 180 days. The radioactivity of a solution accumulating constantly over t days is expressed in the equation:

$$B = \sum_{1}^{n} \int_{0}^{t} A_i dt \qquad (5)$$

where n = number of radioactive components in the solution, and A_i = radioactivity of i component per unit of time. A graph is plotted to show that stabilization occurs after 300 years at a level of 150-fold daily entry of a 30-day solution and 510-fold daily entry of a 180-day solution. The authors consider the case of a cylindrical reservoir with depth (H), base radius (a) and even distribution of radioactivity. To determine the gamma-radiation dose of such a

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reservoir at a point M at a height (h_1) above its surface and distance b from the axis of its cylindrical volume, the whole volume is divided into cylindrical discs dz thick. The radiation from the volume is equal to the sum of the radiation from all the discs. On a disc situated at a distance h_2 from the surface a circular belt dr wide is isolated and the volumetric element of this disc, equal to dzds (ds = rd Θdr) studied. At point M the radiation dose is equal to:

$$\Delta = K \cdot \rho \cdot dz \int_0^a \int_0^{2\pi} \frac{r \cdot dr \cdot d\Theta e^{-(\mu_1 D_1 + \mu_2 D_2)}}{(h_1 + h_2)^2 + b^2 + r^2 - 2br \cos \Theta} \qquad (8)$$

where D = distance of volumetric element from M; D_1 = the part of this distance in the air; D_2 = the part of this distance in the

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water; ρ = specific activity of the water; r = radius of circular belt on disc; K = gamma-constant of given radioactive agent; μ_1 = linear coefficient of radiation attenuation in the air; μ_2 = linear coefficient of radiation attenuation in water. Equations are also given for special cases where b = 0 and where $a \to \infty$. Various examples are plotted to demonstrate the method of approximate integration and to show that the intensity of the gamma-radiation dose above the surface of the reservoir tends toward its limit with a reservoir of radius 0.5 m. This indicates that the relationship of dose to radius is the same as that of dose to reservoir depth. The specific radioactivity of the water, as calculated by the method, will be lower than in reality since the calculations do not take into effect the manifold Compton scattering of radiation in thick layers of water, due to which the effective linear coefficient of attenuation should be greater. Equations are then given for calculating gamma-radiation above a reservoir of any radius ($a \geq 1$ m) in which the radioactivity of an unseparated solution of uranium fragments is evenly distributed. One meter above a reser-

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voir of infintely great radius (for practical purposes a $\geqslant$1 m) the gamma-radiation dose rises rapidly with an increase in depth to 10 cm; at 50 cm it tends toward its limit of ~0.15 r/hr for a 30-day solution and ~0.14 r/hr for a 180-day solution. The specific radioactivity of the water in such a reservoir causing the maximum permissible dose of radiation 1 meter above its surface would be 0.04 μc/l. A model experiment was performed to check the accuracy of the approximate calculations. A divergence of 17.4% was noted between the calculated values and the experimental findings. The authors give a formula for calculating the intensity of beta-radiation inside a reservoir with evenly distributed radioactivity from an unseparated solution of uranium fragments. The results show that the intensity of mixed beta- and gamma-radiation inside the reservoir is the same for solutions of 30 days or 180 days and comprises ~1.2 r/hr with a specific activity of the water of 1 μc/l and a depth above 0.5 m. The calculations enable one to determine the level of radioactivity of an unseparated solution of uranium fragments which accumulates over a certain period of time in a dumping pit for active waste, in an isolated reservoir or in any other storage

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body into which the radioactivity enters evenly. It enables the upper limit of accumulation to be determined and also the time which it takes for the radioactivity to be stabilized at this limit level. Gamma-radiation outside active reservoirs with linear dimensions >1 m will be the same for the same specific radioactivity of the water. At the edge of the pool at a height of 1 m this dose does not exceed the maximum permissible dose with a water radioactivity of 80 μc/l. With this same specific radioactivity, the intensity of beta- and gamma-radiation inside the reservoir comprises ~0.1 r/hr, i.e. 16 times the dose of gamma-radiation outside the reservoir. The authors recommend that these considerations be taken into account in designing purifying installations and reservoirs for deactivating radioactive waste waters. There are 7 figures, 2 tables and 9 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: C. Davisson a. R. Evans, Gamma-ray absorption coefficients. Rev. Mod. Phys., 24, 79, 1952; J. M. Hollander, J. Perlman a. G. T. Seaborg, Table of Isotopes. Rev. Mod. Phys., 25, 469, 1953; L. D. Marinelli,

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31454
S/626/60/000/012/009/010
D298/D303

The distribution of dispersed ...

R. F. Brinckerhoff a. G. J. Hine, Average energy of Beta-rays emitted by radioactive isotopes. Rev. Med. (?) Phys., 19, 25, 1947.

Card 7/7

85967
S/126/60/010/005/015/030
E111/E452

18.7500 1555

AUTHORS: Klotsman, S.M., Timofeyev, A.N. and Trakhtenberg, I.Sh.

TITLE: Measurement of Diffusion Coefficients in Oxide Phases

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol.10, No.5, pp.732-735

TEXT: The authors point out that investigations of diffusion in scale are difficult and are, therefore, often (Ref.1 to 6) carried out on sintered compacts. The present investigation was on single crystals of magnetite as well as such compacts of the crushed single crystals. Compression was at 3000 kg/cm^2 and sintering was at 1100°C for 60 hours in purified argon. Diffusion annealing was effected in the same atmosphere with specimens in pairs (1 tablet with 1 single crystal) and their active sides (deposit of iron containing Fe^{55}) inwards. The diffusion coefficient was determined to ± 15%. Correction was made for the concentration distribution of the diffusing element in removed layers, as previously described by the authors (Ref.8). Self-diffusion coefficient values for iron at 850 to 1075°C were found to be represented by

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Measurement of Diffusion Coefficients in Oxide Phases

$6 \times 10^5 \exp(84.0 \pm 5.9) \frac{\text{kcal}}{\text{mol}} / RT \quad \frac{\text{cm}^2}{\text{sec}}$ for single crystals and

$1 \times 10^4 \exp(74.7 \pm 4.5) \frac{\text{kcal}}{\text{mol}} / RT \quad \frac{\text{cm}^2}{\text{sec}}$ for compacts.

The activation energies differ from some published values (Ref.9) whose experimental points are represented in Fig.1 with those of the present work. The difference between values for the two types of specimen used tend to decrease as temperature rises (annealing at 1300°C eliminates significant differences). Fig.2 shows plots of a value proportional to specific activity of the diffusing element against the square of the depth below the active layer (Curves 1 and 2 for compact and single crystal respectively): the anomalously sharp fall in the activity parameter close to the active layer makes it impossible to determine the "volumetric" diffusion coefficient of compacts from the initial part of the concentration curve. There are 2 figures, 1 table and 11 references: 5 Soviet and 6 Non-Soviet.

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E111/E452

Measurement of Diffusion Coefficients in Oxide Phases

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals AS USSR)

SUBMITTED: May 3, 1960

Card 3/3

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I. Sh.

Feasibility of determining the thickness of intercrystalline bonds on semiconductor bicrystals. Fiz. met. i metalloved. 11 no.6:951-952 Je '61. (MIRA 14:6)

1. Institut fiziki metallov AN SSSR.
(Semiconductors)
(Crystal lattices)

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.; Prinimal uchastiye: MIROSHNIKOV, L.A., student

Investigating the diffusion properties of monochalcogenides of transition metals. Part 1. Self diffusion of nickel and sulfur in single nickel monosulfide crystals. Fiz. met. i metalloved. 12 no.3:463-464 S '61. (MIRA 14:9)

1. Institut fiziki metallov AN SSSR. 2. Ural'skiy gosudarstvennyy universitet (for Miroshnikov).
(Nickel) (Sulfur) (Diffusion)

L 47410-66
ACC NR: AP6027[illegible] SOURCE CODE: GE/0030/66/016/002/0729/0736

AUTHOR: Archipova, N. K.; Klotsman, S. M.; Timofeev, A. N.; Trakhtenberg, I. Sh.

ORG: Institute of Metal Physics, Academy of Sciences SSSR, Sverdlovsk

TITLE: Effect of a d-c field on the lattice diffusion of silver-110 in copper and gold

SOURCE: Physica status solidi, v. 16, no. 2, 1966, 729-736

TOPIC TAGS: direct current field, lattice diffusion, silver 110, copper, gold, electron drag, matrix conductivity, electromigration

ABSTRACT: A study is made of the effect of direct current, with a density of about 100 to 150 amp/mm^2, on the diffusion of silver-110 in gold (99.99%) and high purity grade copper, at temperatures above 800C. Diffusion of silver-110 is measured by the residual activity method. The direction of the electromigration and the magnitude of the activated ions "effective charge" is clear indication of electron drag. The "effective charge" decreases linearly with an increase in

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L 47410-66
ACC NR: AP6027757

temperature. The temperature coefficient of the "effective charge" of silver in gold and copper is higher than the temperature coefficient of the matrix conductivity. Orig. art. has: 7 figures, 3 tables, and 10 formulas. [Authors' abstract]
[KS]

SUB CODE: 20/ SUBM DATE: 18Apr66/ ORIG REF: 011/ OTH REF: 006/

Card 2/2 vlr

ARKHIPOVA, N.K.; KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Intercrystalline electric transfer of silver in gold.
Fiz. met. i metalloved. 20 no.1:159-160 Jl '65.
(MIRA 18:11)

1. Institut fiziki metallov AN SSSR.

KLOTSMAN, S.M.; ARKHIPOVA, N.K.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Silver diffusion in polycrystalline gold. Fiz. met. i metalloved. 20 no.3:390-395 S '65. (MIRA 18:11)

1. Institut fiziki metallov AN SSSR.

ACCESSION NR: AP4009383 S/0126/63/016/006/0895/0903

AUTHORS: Klotsman, S. M.; Timofeyev, A. N.; Trakhtenberg, I. Sh.

TITLE: On the problem of diffusion in polycrystals

SOURCE: Fizika metallov i metallovedeniye, v. 16, no. 6, 1963, 895-903

TOPIC TAGS: volumetric diffusion, intercrystalline diffusion, diffusate, intercrystalline junction, nickel, chromium, silver, heterodiffusion, electric transport, ferric oxide, self diffusion, reaction diffusion, face centered lattice

ABSTRACT: The authors studied the laws of diffusion in polycrystals and the contribution of intercrystalline diffusion to the total diffusion current. The following expressions were obtained for the concentration Q_{gr} of the diffusate due to intercrystalline diffusion and for Q_{ob} and the concentration due to volumetric diffusion, at a point distance y from the source

$$Q_{ob} = K \exp\left(\frac{y^2}{4D_{ob}t}\right) \text{ and } Q_{gr} = K' \exp\left[-\left(\frac{2D_{ob}}{\delta D_{gr}}\right)^{\frac{1}{2}} \frac{y}{(\pi D_{ob}t)^{\frac{1}{4}}}\right],$$

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ACCESSION NR: AP4009383

Here K and K' are time-dependent coefficients governing the volumetric diffusion and the intercrystalline diffusion respectively, D_{ob}, and D_{gr} are the corresponding diffusion coefficients, δ is the effective width of the intercrystalline junction, and t the diffusion time. The experimental results available in literature were analyzed, and a criterion was obtained for estimating the temperature range in which the diffusion would be mainly volumetric or intercrystalline. It was found that the temperature range for silver was about 100-150C and for nickel it was 150-280C. The authors analyzed the available results on heterodiffusion and electrical transport in nickel. They discuss the possibility of improving the accuracy of diffusion measurements. From an analysis of the data obtained in the electrical transport in chromium in a temperature range of 950-1100C and in silver in a range of 950-1350C it was found that the lower limit for the recovery of polycrystals was about 0.85 to 0.9 times the melting point of the metal (in the case of metals with face-centered lattices). In the case of nickel, the temperature for self-diffusion was found to be about 1250-1300C. The authors thank V. I. Arkharov for his valuable discussions. Orig. art. has: 5 formulas and 2 tables.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physics of Metals, AN SSSR)

Card 2/3

ACCESSION NR: AP4009383

SUBMITTED: 06Apr63 ENCL: 00

SUB CODE: MM, SS NO REF SOV: 019 OTHER: 013

Card 3/3

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Investigating the diffusion properties of transition metal chalcogenides. Part 4: Temperature dependence of the anisotropy of the self diffusion of nickel and sulfur in nickel monosulfide. Fiz. met. i metalloved. 16 no.5:743-750 N '63. (MIRA 17:2)

1. Institut fiziki metallov AN SSSR.

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Intercrystalline self-diffusion of silver in an electric field.
Fiz. tver. tela 5 no.11:3276-3281 N '63. (MIRA 16:12)

1. Institut fiziki metallov AN SSSR, Sverdlovsk.

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Diffusion in polycrystals. Fiz. met. i metalloved. 16 no.6:895-903 D '63. (MIRA 17:2)

1. Institut fiziki metallov AN SSSR.

KLOTSMAN, S.M.; TIMOFEYEV, A.N.; TRAKHTENBERG, I.Sh.

Mechanism of the diffusion of impurities in germanium. Fiz. met.i metalloved. 14 no.6:925-927 D '62. (MIRA 16:2)

1. Institut fiziki metallov AN SSSR.
(Germanium--Metallography) (Diffusion)

24.7500

S/126/62/014/001/006/018
E071/E135

AUTHORS: Arkharov, V.I., Klotsman, S.M., Timofeyev, A.N., and Trakhtenberg, I.Sh.

TITLE: An investigation of diffusion properties of monochalcogenides of transitionary metals. II. Self-diffusion in polycrystals

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.1, 1962, 68-74

TEXT: Since no results of investigations of the laws of intercrystalline diffusion in chemical compounds have been published and study of these laws on polycrystalline chemical compounds and their comparison with the laws for elementary substances would give a basis for modelling the structure of intercrystalline linkages in chemical compounds, self-diffusion of Ni in mono- and polycrystals of nickel monosulphide in the temperature range 400-800 °C was studied radiometrically and by autoradiography. Both compounds were obtained by reaction between the individual components in evacuated and sealed ampules, subsequent melting and homogenation. Chemical and X-ray

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diffraction analyses confirmed that the specimens were single phased with a structure of the NiAs type. The diffusion was measured on specimens 3-4 mm in diameter and 10 mm thick, one face of which was covered with the diffusion source by vacuo spraying, using Ni^{53}, Co^{60} and Te^{125m} as diffusing elements. Unlike pure metals, predominant self-diffusion in polycrystals along the grain and mosaic block boundaries occurs at temperatures considerably above 0.6-0.7 of the melting temperature and the ratio of intercrystalline diffusion permeability to the "volume" coefficient of self-diffusion amounts to 10^{-1} - 10^{-2} cm^3/sec. In single crystals of nickel monosulphide predominant diffusion along the grain and mosaic block boundaries occurs at even 0.6 times the melting temperature. The mechanism of scale formation during the process of reaction diffusion can be best studied by measuring the parameters of volume and boundary diffusion of phases entering the composition of the scale. There are 4 figures.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals, AS USSR)

Card 2/2
SUBMITTED: November 10, 1961.

TIMOFEYEV, A.N.

Crustal structure from gravity and seismic measurements. Izv. AN SSSR Ser. geofiz. no.10:1441-1448 O '64.
(MIRA 17:11)

1. Institut geofiziki Ural'skogo filiala AN SSSR.

TIMOFEYEV, A.P., inzh.

Anchoring concrete construction elements. Gidr.stroi. 30 no.7:13-17 Jl '60. (MIRA 13:7)
(Hydraulic structures) (Concrete construction)

TIMOFEYEV, A.P., inzh.

Anchorage of slabs in hydraulic structures. Gidr. i mel. 13 no.9:48-53 S '61. (MIRA 14:9)

1. Moskovskaya ordena Lenina sel'skokhozyaystvennaya akademiya im. K.A.Timiryazeva.

(Hydraulic engineering)

TIMOFEYEV, A.P., inzh.

Anchoring concrete structures. Gidr. stroi. 32 no.1:27-30 Ja '62. (MIRA 15:3)
(Reinforced concrete construction)

IVANOV, G.L.; TRIKHBYEV, A.F.

Controlling paraffin deposition by means of [illegible] electromagnetic field. Mash. i neft. obor. no. 11:21-22 '65 (MIRA 18:[illegible])

1. Neftepromyslovoye upravleniye "Aksakovneft'".

TIMOFEYEV, A.P.; BEREZIN, G.N.

Valve for jettisoning gas from the annular space to the pump. Nefteprom. delo no.8:25-27 '64. (MIRA 17:12)

1. Nefteppromyslovoye upravleniye "Aksakovneft'".

GAVRILOV, A.A.; TIMOFEYEV, [illegible]

Automating the operation of an electric sinking pump. Neftepromysl. delo no.12:21-24 '64. (MIRA 18:3)

1. Neftepromyslovoye upravleniye "Aksakovneft'".

[illegible], Aleksandr Sergeevich.

A guide to commanding officers and soldiers in universal military training. Moskva, Gos. bibliotechno-bibliograficheskoe izd-vo, 1942. 52 p. (50-43906)

Z6721.T5

A guide to commanding officers and soldiers in universal military training, 1942

Z6721.T5

1. Military art and science - Bibl.

I. Miasnikob, Mikhail Akimovich, 1894- ed.

1. TRIOFEYEV, A. T.

2. USSR (600)

4. Seeds

7. Effect of heating seeds for a short period on their germination. Sel. i sem. 20, No. 5, 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

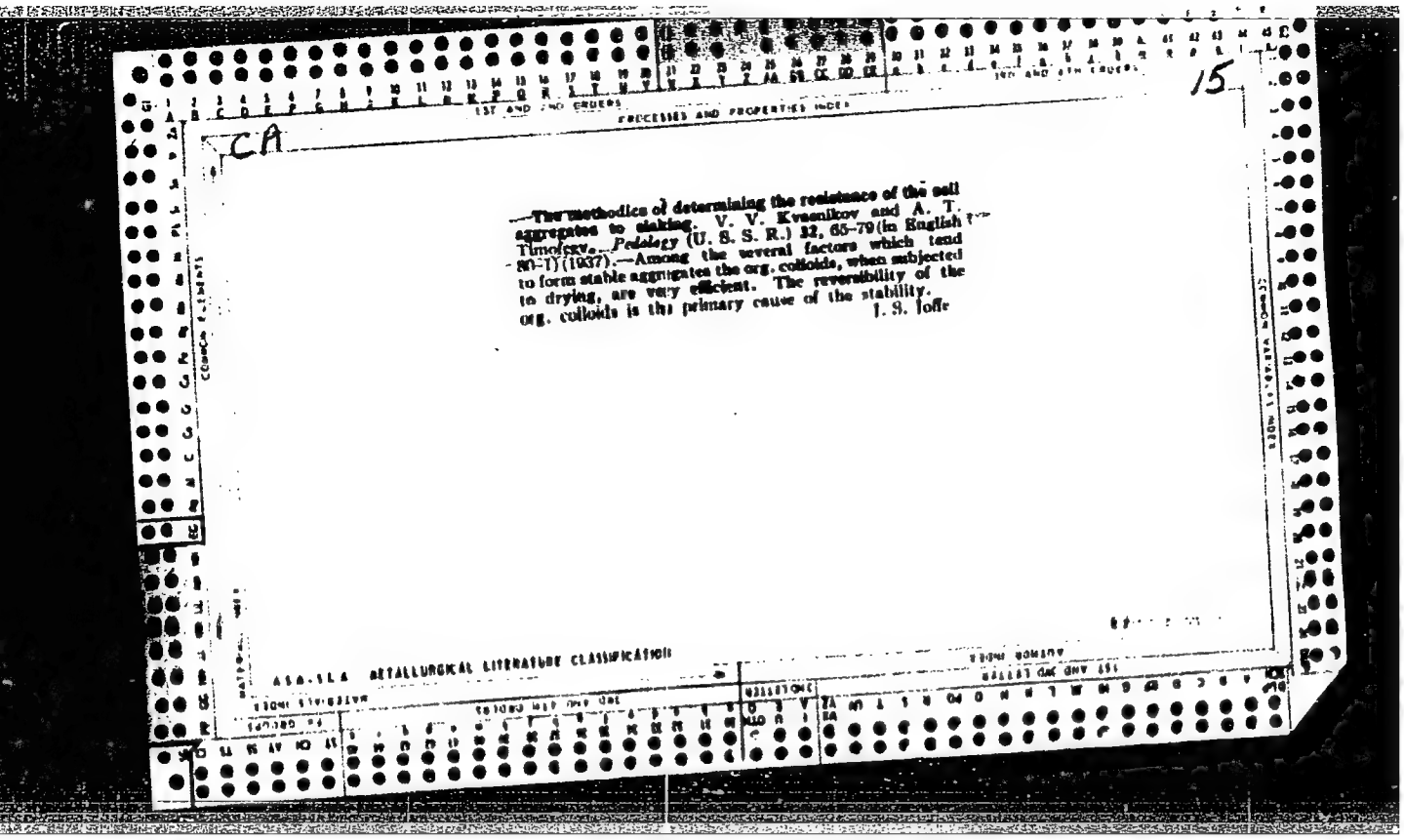
SINEL'NIKOV, K.D.; SAFRONOV, B.G.; TIMOFEYEV, A.T.; PANKRAT'YEV, Yu.I.

[Interaction between ions and electrons in an accelerated ion beam] Izuchenie vzaimodeistviia mezhdu ionami i elektronami v uskorennom puchke ionov. Khar'kov, Fiziko-tekhn. in-t AN USSR, 1960. 209-214 p. (MIRA 17:1)

TIMOFEYEV, A. T.

Effect of perennial herbage mixtures and of deepening the ploughed layer on the increase of soil fertility. A. T. Timofeev (*Pochvovedenie*, 1954, No. 6, 99—102).—In a three-year period a sanfoin–couch grass–meadow fescue herbage accumulated more root residues and produced better aggregation in the upper 0—40 cm. of soil than did a sanfoin–couch grass mixture. High yields of herbage were associated with high accumulations of root residues, better soil structure and higher soil moisture reserves. Wheat yields were greater following the triple herbage mixture than after the two-species mixture.

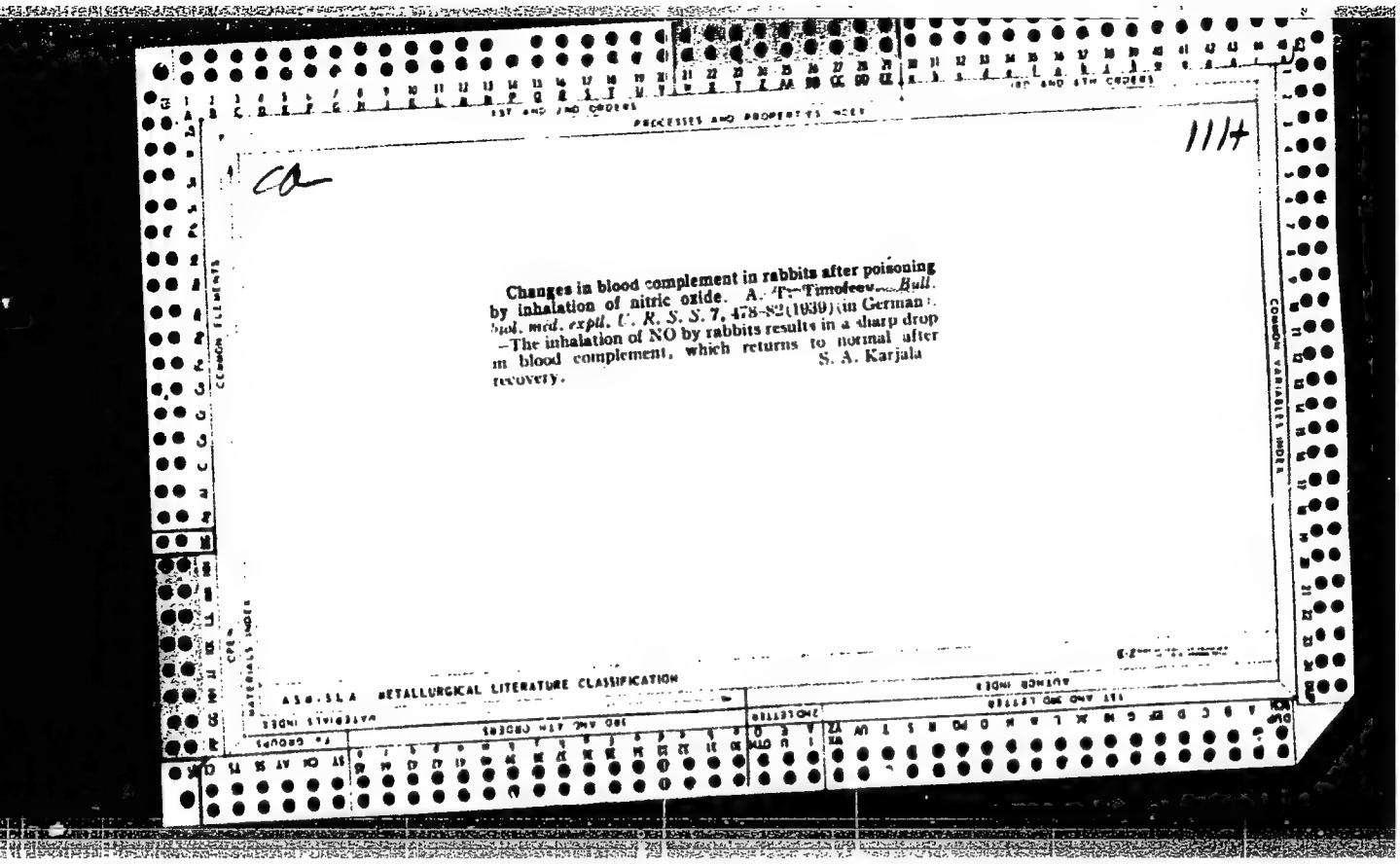
SOILS & FERT. (A. G. P.).



15

CA

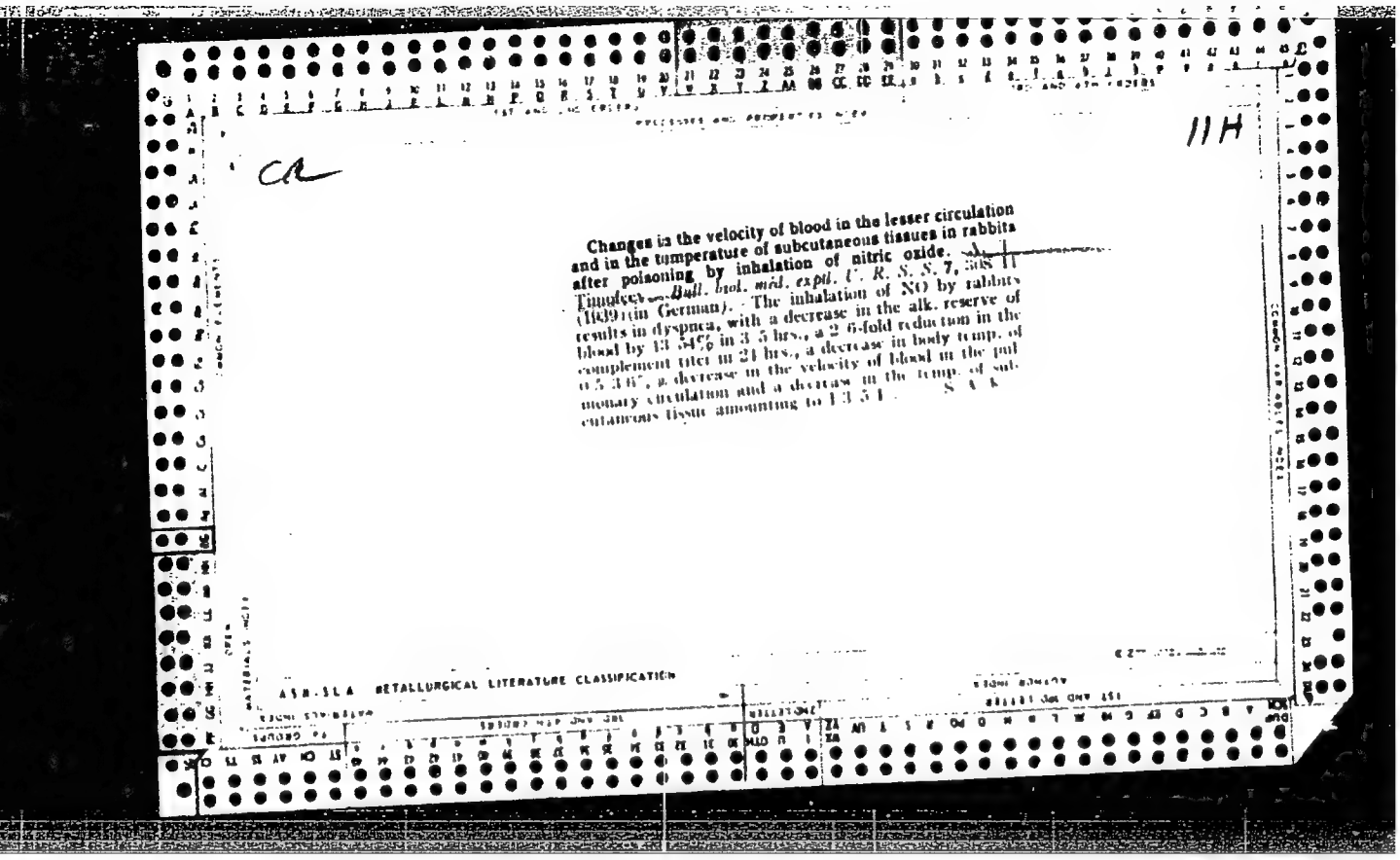
—The methodics of determining the resistance of the soil aggregates to slaking. V. V. Kvasnikov and A. T. Timofeev. *Pedology* (U. S. S. R.) 32, 65–79 (in English 79–81) (1937).—Among the several factors which tend to form stable aggregates the org. colloids, when subjected to drying, are very efficient. The reversibility of the org. colloids is the primary cause of the stability.
I. S. Joffe



1114

Changes in blood complement in rabbits after poisoning by inhalation of nitric oxide. A. P. Timofeev. *Bull. biol. med. exptl. U. R. S. S.* 7, 478-82 (1939) (in German). —The inhalation of NO by rabbits results in a sharp drop in blood complement, which returns to normal after recovery.
S. A. Karjala

A58.11A METALLURGICAL LITERATURE CLASSIFICATION



Changes in the velocity of blood in the lesser circulation and in the temperature of subcutaneous tissues in rabbits after poisoning by inhalation of nitric oxide. Timofeev. *Bull. biol. med. exptl. U. R. S. S.* 7, 305 (1939) (in German). The inhalation of NO by rabbits results in dyspnea, with a decrease in the alk. reserve of blood by 13–45% in 3–5 hrs., a 2–6-fold reduction in the complement titer in 24 hrs., a decrease in body temp. of 0.5–3.6°, a decrease in the velocity of blood in the pulmonary circulation and a decrease in the temp. of subcutaneous tissue amounting to 1.3–5.1°. S. A. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

83190

S/056/60/039/002/027/044
B006/B056

26.231.1
24.2120

AUTHOR: Timofeyev, A. V.

TITLE: The Build-up of Acoustic Oscillations in an Anisotropic Plasma

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 2(8), pp. 397-399

TEXT: Usually, plasma stability investigations are carried out on the assumption that the mean Larmor radius r of the ions is small as compared to the characteristic dimensions of the problem, e.g., as compared to the wavelength λ, as this simplifies the treatment of the problem considerably. The author of the present paper investigates the stability of an anisotropic plasma for $\lambda \sim r$ and $\lambda \ll r$. Here, Maxwell temperature distribution of the ions is assumed in the transverse and longitudinal directions to the field. The influence exerted by temperature anisotropy upon the build-up of transverse oscillations of a homogeneous plasma in the case of $r/\lambda \to 0$ has already been investigated by A. A. Vedenov, R. Z. Sagdeyev, and V. D. Shafranov (Refs. 1, 2), who found that the plasma became more stable with decreasing pressure. Several further results of these investigations connected herewith are discussed in the introduction. As a

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The Build-up of Acoustic Oscillations in an Anisotropic Plasma

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stability condition it was found that the ratio between the squares of the thermal and Alfvèn velocities of the ions is $v_T^2/v_A^2 \ll 1$. This ratio is denoted by β. If the electron temperature is $T_e = 0$, a decrease of β leads to stabilization both with $r/\lambda \gg 1$ and $r/\lambda \ll 1$ in the case of transverse oscillations. For $\beta \ll 1$, an investigation of the longitudinal oscillations is, therefore, of special interest. The author investigated acoustic oscillations in a plasma at $T_e \gg T_i$; here, the phase velocity of the oscillations is determined by T_e, and a change of β cannot essentially influence the build-up of oscillations. It may, therefore, be assumed that for small β, such oscillations are unstable. This is, as shown by a theoretical investigation, actually the case. The build-up of ionic acoustic oscillations in an anisotropic, non-isothermal plasma is a consequence of cyclotron resonance. With $r/\lambda \to 0$, the oscillation frequency is of the same order of magnitude as the cyclotron frequency of ions. An anisotropic plasma with $\mu, X \neq 1$ and for small β is unstable with respect to ionic acoustic oscillations; these oscillations may also be built up in the case of comparatively high magnetic field strengths. ($\mu = T_\parallel/T_{\parallel e}$, $X = T_\perp/T_\parallel$, $\beta = 8\pi n T_\perp/H^2$). The author thanks B. B. Kadomtsev for his help and instructions. There are 1 figure and 4 references: 3 Soviet and 1 US.

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The Build-up of Acoustic Oscillations in an Anisotropic Plasma

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24.6714

AUTHOR: Timofeyev, A. V.

TITLE: Instability of the positive column in short discharge tubes in a longitudinal magnetic field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 12, 1961, 1420 - 1425

TEXT: The escape of particles from the positive column of a discharge plasma was found to increase abnormally rapidly if the magnetic field is stronger than a certain critical value. This behavior was studied in magnetic fields strong enough to induce magnetization of the ions. The considerations were made for short discharge tubes with $\frac{a}{l}(\Omega\tau) \gg 1$ where longitudinal electron diffusion is predominant. l = length, a = radius of the tube, $\Omega = eH/m_e c$ is the electron cyclotron frequency, τ = time between collisions of an electron with the neutral gas molecules. The phenomena have already been explained for long tubes by B. B. Kadomtsev and A. V. Nedospasov (J. Plasma Physics, 1, 1960). The stability of the oscillations of the positive column is investigated by the method of small

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Instability of the positive...

perturbations. On the basis of the dispersion relations it is shown that the first azimuthal harmonic is not excited if the tube is short enough. The positive column becomes stable with respect to all harmonics if the length of the tube is further reduced. The author thanks B. B. Kadomtsev and A. V. Nedospasov for guidance and discussions. There are 1 table and 9 references: 4 Soviet and 5 non-Soviet. The four references to English-language publications read as follows: T. Allen et al. Phys. Rev. Letters, 5, 409, 1960. B. Lehnert. Report P/146 on the II United Nations Intern. Conf. on the Peaceful Uses of Atomic Energy, Geneva, 1958; F. Hoh, B. Lehnert. Report III a 604 on the IV Intern. Conf. on the Ionization Phenomena in Gases, Uppsala, 1959; B. B. Kadomtsev, A. V. Nedospasov. J. Plasma Physics, 1, 1960.

SUBMITTED: March 18, 1961

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SHAMRAY, Boris Viktorovich; TIMOFEYEV, A.V., prof., nauchn. red.; YEVSEYEV, V.I., tekhn. red.

[Electromagnetic devices] Elektromagnitnye ustroistva. Leningrad, Leningr. elektrotekhn. in-t im. V.I.Ul'ianova (Lenina). No.2. [Magnetic amplifiers] Magnitnye usiliteli; uchebnoe posobie. 1962. 148 p. (MIRA 17:3)

TIMOFEYEV, A.V.

Instability of a weakly ionized nonuniformly heated plasma in a uniform magnetic field. Zhur. tekh. fiz. 32 no.11:1297-1301 N '62. (MIRA 15:11)

(Plasma (Ionized gases)) (Magnetic fields)

KADOMTSEV, B.B.; TIMOFEYEV, A.V.

Drift instability of an inhomogenous plasma in a magnetic field. (MIRA 15:10)
Dokl. AN SSSR 146 no.3:581-584 S '62.

1. Chlen-korrespondent AN SSSR (for Kadomtsev).
(Plasma (Ionized gases)) (Magnetic fields)

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ACCESSION NR: AP3003944 Po-4/Pi-4 AT S/0057/63/033/007/0776/0781

AUTHOR: Timofeyev, A.V.

TITLE: Convection in a weakly ionized plasma in a nonuniform external magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.33, no.7, 1963, 776-781.

TOPIC TAGS: plasma convection

ABSTRACT: In order to determine whether the known laminar convective instability of a fully ionized plasma in a non-uniform magnetic field extends also to weakly ionized plasmas, the stability of a weakly ionized plasma under by specific geometric conditions is discussed. The plasma occupies the annular space between two coaxial circular cylinders of radii R and R + d in which there is present an azimuthal magnetic field with strength inversely proportional to the radius, such as would be produced by an axial current flowing in the inner cylinder. Ions are produced at a fixed rate on the surface of the inner cylinder, whence they diffuse to the outer cylinder and recombine. The motions of the ions and electrons are described by their mobilities, and the steady state solution is obtained. The stabi-

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lity of the solution is discussed with respect to axial waves. It is found to be unstable for magnetic fields greater than a temperature independent critical value, the square of which is proportional to d/R. In fields somewhat stronger than the critical field, laminar convection develops in cells with dimensions of the order of d. The perturbed motion is discussed in a "quasi-linear" approximation in which the square of the perturbation amplitude is not neglected, and an expression is obtained for the additional current that arises from the convection. "The author expresses his deep gratitude to B.B.Kodomtsev, under whose direction the work was performed." Orig.art.has: 19 formulas.

ASSOCIATION: none

SUBMITTED: 3July62 DATE ACQ: 07Aug63 ENCL: 00

SUB CODE: PH MM NO REF SOV: 000 OTHER: 00

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L 18479-63 EWT(1)/EWG(k)/BDS/EEC(b)-2/ES(w)-2 AFFTC/ASD/ESD-3/SSD/
AFWL/IJP(C) Po-4/Pz-4/Pi-4/Pab-4 AT S/0057/63/033/008/0909/0914
ACCESSION NR: AP3005499

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AUTHOR: Timofeyev, A.V.

TITLE: Dissipative instability of a weakly ionized non-uniform plasma in a uniform external magnetic field 21

SOURCE: Zhurnal tekhnicheskoy fiziki, v.33, no.8, 1963, 909-914

TOPIC TAGS: plasma stability, dissipative instability

ABSTRACT: The instability of a weakly ionized non-uniform plasma in a uniform magnetic field due to the dissipative effect of collisions between the electrons and neutral atoms is discussed. The author has previously treated this type of instability in a plasma with non-uniform temperature (ZhTF, 32, No.11, 1962); in the present paper he considers a plasma with non-uniform density. The electron and ion densities are assumed to be equal (frequencies small compared with the Langmuir frequency) and collisions with neutral atoms are taken into account by a force -mνf in each of the two (ion and electron) equations of motion, where f is the collision frequency of the charged particle concerned with neutral atoms. The (uniform) electron temperature is assumed greatly to exceed the (also uniform) ion temperature, and the ion pressure is accordingly omitted from the equations of motion. The in-

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